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COVER: "Ready Camera One. Cue the Talent." HM2 Charles P. Runyan, medical photographer, works in the Navy Medical Department's only T.V. studio at the Naval Health Sciences Education and Training Command, Bethesda, MD. Creating training aids is only one job of this small but very versatile command. Story on page 16. Photo by HM2 James Parmenter.

Dental Corps Rehearses for Mass Casualty Situations

The Camp Pendleton, CA, Marine Corps training base recently was the site for the first "out-of-command" Casualty Treatment Training Course presented by NRDC San Diego for Navy Dental Corps officers. Thirty-six dental officers from the 1st Dental Company, Camp Pendleton, 11th Dental Company, El Toro MCAS, and NRDC Camp Pendleton, participated in the week-long training course. The curriculum included classroom lectures at NRMC Camp Pendleton and "hands-on" practical experience in the field.

The course is conducted five times a year by NRDC San Diego, training 180 dental officers annually in mass casualty treatment. Similar courses are also sponsored each year by dental commands in Norfolk, VA, Great Lakes, IL, and Pearl Harbor, HI.

LT Lisa Davis, one of the dental officers participating in the class, remarked to a Camp Pendleton columnist, "This has really been an excellent course. I've gained a lot of confidence . . . and it's been a lot of fun, too!" This sentiment was shared by most of the participants.

Besides learning about the initial management of both battlefield and nonmilitary injuries, participants became adept at the art of triage. Dental officers are often required to assume responsibility of triage officers in many combat situations ashore and afloat.

Additionally, class participants learned to integrate with civilian dis-



LT Laurel Neilson, DC, applies a battle dressing to a simulated chest wound on a Marine "casualty."



A dental officer carefully monitors the bleeding and airway status of one of the simulated casualties in the field exercise.

aster teams (in cases of noncombat-related disasters), management of emergency childbirth, recognition and management of drug and alcohol withdrawal, handling of mentally disturbed casualties, methods of identifying bodies through dental means, dealing with nuclear, biological, and chemical warfare injuries, management of battle dressing stations aboard ships, and many other topics.

LCDR Gordon Nolan, course director, noted, "We try to give them exposure to a wide variety of material. Although the doctors are primarily affiliated with FMF units now, these same officers could become involved in shipboard or civilian-assist situations in the future, so it's important that they have a broad base of knowledge and complete flexibility."

DT3 Jack York, logistical assistant for the course, remarked, "The biggest problem we anticipated in teaching this course away from our

home command was the logistical and equipment requirements. However, because of the excellent cooperation from the host commands, we've only had minor problems. I think it's gone very smoothly."

The course was capped by a realistic field exercise in which nine teams of four doctors each were tasked with managing a field-full of Marine "casualties" with simulated battlefield injuries. Rank had no privilege as each and every dental officer pitched in treating priority casualties, transporting them to a staging area, and triaging for a simulated helicopter evacuation. Afterward, the participants returned to the classroom, where faculty members critiqued their performance.

LCDR Nolan remarked, "Most of the participants in our classes have been innovative and enthusiastic, but I'm really impressed with this class; they used a lot of imagination and ingenuity, especially when we denied their requests for more supplies. If

this were an actual situation, they'd have to make do with what's on hand. We purposely shortchanged them to see how they manage their supplies."

CAPT Roger Alexander, another faculty member, added, "This has been a very attentive class, probably because they have a greater sense of urgency. Being assigned to FMF units, they realize they could be doing this for real next week or next month!"

Through ongoing training courses and exercises like this, the Navy Dental Corps is assuring that it will be ready to meet the challenges of combat medicine in the 80s, and that dental officers will be prepared to assume whatever responsibilities might be placed upon them in future military conflicts or in times of natural or manmade disasters.

—Story by CAPT Roger E. Alexander, DC, PAO, NRDC San Diego, CA. Photos by LCPL Earnie Grafton, USMC □

Diana Lainhart:

Search and Rescue Corpsman

The yellow phone in the Acute Care Clinic rings. Someone picks up the receiver as a tense voice from the attached loud speaker cries, "Crash Alert," followed by a description of an aircraft in trouble.

Moments later, the "bird" is down. A call comes from Air Operations announcing, "SAR Rollout!"

In Military Sick Call, there is another alert: "Attention Staff, Code Blue Alpha!" Seconds later, a young woman is at her locker donning a flight suit. She dresses quickly, gathers her equipment, and rushes to a waiting field ambulance. With flashing red lights and sirens wailing, the vehicle races for the flight line. Elapsed time: four to five minutes. HM3 Diana L. Lainhart, Cardio-Emergency Medical Technician, and SAR (Search and Rescue) Corpsman at NRM C Branch Clinic, NAS Oceana, VA, is airborne and enroute to the scene.

Search and rescue demands technical expertise, physical stamina, and dedication. In short, it is a job for a professional. In a field dominated by men, HM3 Lainhart has proven that gender is not a factor.

Her first inquiries into joining the SAR Team were met with little encouragement outside the Clinic. However, with determination and an exceptional amount of initiative, Lainhart set out to meet the professional qualifications.

After passing the physical exam, she took the swimming test. Now rated as first-class swimmer, she then took the water survival training and physiology training courses at NAS Norfolk.

Following completion of her physical and training qualifications, HM3

Lainhart went on to backseat flying with VC-2. When she had logged enough flight time to prove experience, she put her package together and again approached the matter of flying SAR. Now fully qualified, there could be but one answer.

It took several months to meet all the standards, and nearly one year before she obtained the SAR NEC 8294 and her Air Crew Wings, but with support from her husband and

the senior administrative personnel at the Clinic, HM3 Lainhart has reached her goal in the Navy.

The 22-year-old native of Columbus, OH, has now set a new challenge for herself. She recently began flying lessons, and plans to qualify as a licensed helicopter pilot. With her indomitable spirit, even the sky is no limitation.

—Story and photos by HMC Robert H. O'Meara □



HM3 Lainhart completes a SAR mission.

Naval Biodynamics Lab

CAPT Paul L. Majewski, MC, USN

The Naval Biodynamics Laboratory (NBDL) is located in eastern New Orleans on the grounds of the Michoud Assembly Facility, a branch of NASA's George C. Marshall Space Flight Center. It occupies 30,000 square feet of office and laboratory space, and two large test cells, each 185 feet long, 86 feet wide, and 70 feet high. Within these two test cells are located the mechanical devices used to conduct both human and animal biodynamic experiments. The assigned staff consists of 44 civilian scientists, engineers, and technicians; 21 enlisted Navy volunteer research subjects; eight naval officers, two Air Force veterinary officers, and one Navy chief hospital corpsman.

The most valuable asset is the volunteer group, without which the experiments could not be accomplished. The volunteer subjects are from the Naval Training Center, Orlando, FL, and normally stay from 12 to 18 months. Of those volunteers who express an interest in joining the research program, only about five percent are eventually qualified after a rigorous medical evaluation. This examination calls upon specialists in internal medicine, cardiology, ENT, ophthalmology, psychiatry, orthopedics, dentistry, audiology, electroencephalography, vestibular physiology, and others if needed. The examination extends over two to three weeks and any prospective

volunteer who is found to have any condition which would place him at excess risk of injury during an experiment is disqualified.

At present only adult males are being accepted; however, women volunteers will be sought in the future and their eventual use has been approved by BUMED.

Five major research programs are in progress as well as several subsidiary ones. The major efforts of the laboratory are in the areas of:

- injury prevention from impact acceleration, i.e., vehicular crashes;
- the effects of vibration on human physiology;
- the effects of motion sickness generated by aircraft, seagoing vessels, or terrestrial vehicles on human physiology and performance;
- performance measures for use in adverse environments; and
- the development of manikins based on human response to biodynamic forces for use in destructive testing and evaluation as human surrogates. The first three programs also make use of subhuman primates.

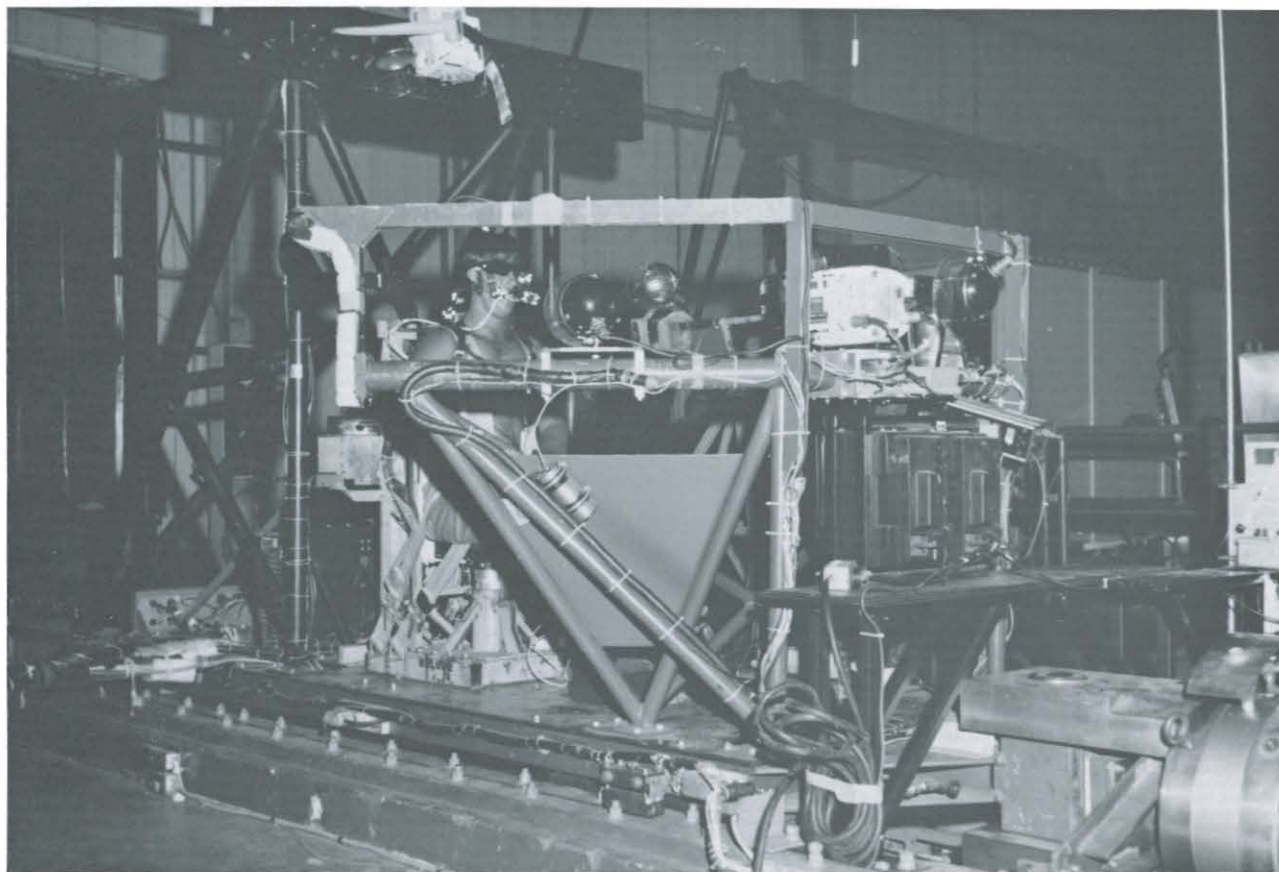
Each program utilizes its own unique devices in conducting the experiments. In the impact program, a gas-operated, horizontal linear accelerator, with its associated electronic controls and data collection systems, is employed. This device has a maximum thrust of 225,000 pounds, using 3,000 psi compressed nitrogen gas. The accelerator propels a sled along a 700-foot track. Human experiments have gone as high as 15 G accelera-

tion, sustained for about one-tenth of a second, with a maximum velocity of 43 mph. This would roughly correspond to bringing your car to a complete stop from 43 mph in a distance of four-and-one-half feet. Since brakes are not used during the human runs, and since the acceleration is administered at the beginning of the experiment, the sled coasts about 250 feet down the track after a 15 G run. All volunteers used for these experiments are exposed incrementally to increasing accelerations beginning with a 3 G experiment and progressing in 1 G steps up to 15 G. Extensive safety precautions are built into the system in the "fail-safe" mode so that accidental or unintentional firing of the accelerator is impossible. The volunteer has his own electrically operated go/no-go switch, as does the medical officer in attendance. During an experiment, the subject is fitted with accelerometer arrays at the mouth, base of the neck (spinous process of the first thoracic vertebra), and on occasion, at the pelvis. High-speed cinematography is also employed.

The first human experiments were conducted in 1974 and since then about 80 volunteers have participated in nearly 2,000 experiments in which significant data were obtained. The accelerator has also been used to obtain engineering and animal data for a grand total of 3,725 sled firings.

The end result of the impact acceleration experiments, accomplished in multiple vector directions with a variety of human subjects, is the

Dr. Majewski is a research medical officer at NBDL New Orleans, LA 70189.



Test subject in the accelerometer

development of mathematical models that accurately reflect the dynamic response of human beings to these forces. From such models, anthropomorphic manikins can be constructed. Used by vehicle manufacturers, they will be instrumental in the design of efficient and safe restraint systems for all types of conveyances—land, sea, and air. It should be emphasized that impact acceleration, i.e., vehicular crashes, is the single most common cause of death in our young Navy population.

Vibration, especially if at high enough levels, can cause many untoward physiological and performance

effects in human operators. At NBDL, experimenters use an electrohydraulic shaker with a frequency range from 1.0 Hz to above 5,000 Hz, and a stroke amplitude of up to 12 inches. It is well suited for human experiments in the range of primary interest, i.e., 1 to 100 Hz. This device, like the impact accelerator, is provided with multiple fail-safe interlocks, as well as volunteer abort and medical officer abort capabilities. The effects of vibration systematically upon human and animal subjects are being studied. Those frequency-acceleration combinations which cause moderate to severe perform-

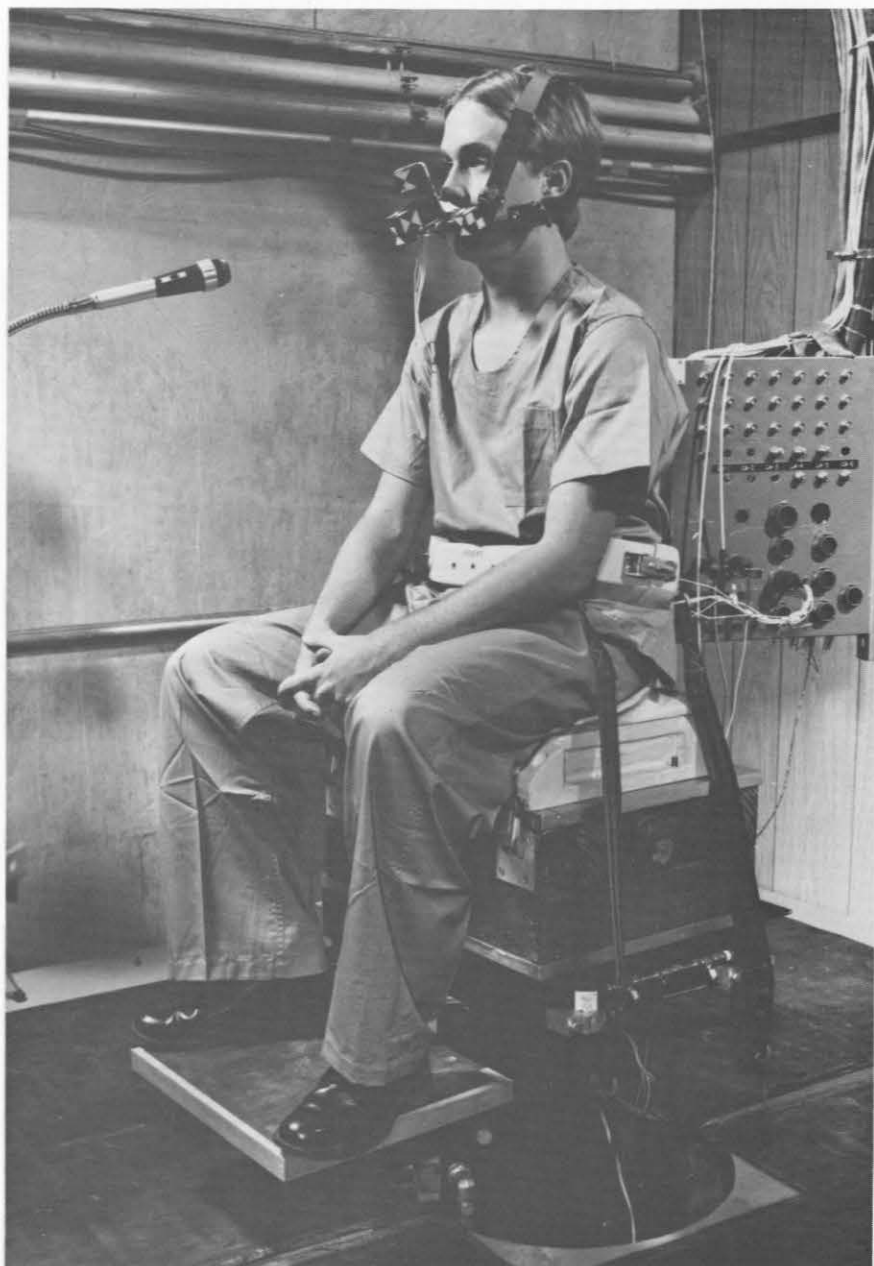
ance degradation are of high interest to design engineers in the proper construction of machines in order to avoid or attenuate those disturbing vibrations. Each volunteer is suitably restrained to the shaker and wears the accelerometer packages so that the precise nature of the vibration as transmitted to and through the anatomy can be observed, recorded, and subsequently analyzed.

Seasickness has long been the bane of the sailor. We are now completing the installation of a ship motion simulator (MOGEN), which can reproduce those frequency-acceleration combinations thought to be the

most emetogenic. The MOGEN has a 22-foot vertical stroke, and is effective from 3 Hz to 0.1 Hz. Various cabins can be fitted to the simulator, thus allowing for short-term, i.e., up to two-hour and also long-term; i.e., up to 72-hour experiments. The simulator was originally contractor-operated in Goleta, CA. The MOGEN was transferred to New Orleans by its owner, the Office of Naval Research, so that NBDL could conduct more efficiently ship motion experiments. Preliminary analysis of work done by NBDL a few years ago on the West Coast indicates that a rather good prediction of an individual's susceptibility to motion sickness can be made. We have also demonstrated that the motions induced by rough seas in advanced vessels can be expected to incapacitate up to 80 percent of the crew because of overt motion sickness. Research will explore various ways of either preventing motion sickness, determining standards for crew selection, or both, in order to allow the Navy to use its surface ships to their full capability.

In order to determine the effects of both motion sickness and vibration upon human performance, a battery of validated performance measures are needed. The Performance Evaluation Tests for Environmental Research (PETER), is part of the solution. Many types of performance tests have been accomplished with the volunteers; these include paper and pencil tests, television games utilizing the ATARI system, and projected slides. Once a valid, stable test battery is developed, performance degradation resulting from motion sickness, vibration, impact, or any mechanical force, can be scientifically evaluated and methods developed to reduce performance degradation.

The last major effort now underway, is the manikin development program. NBDL will use the data gathered from the human impact experiments to develop manikins. These manikins would show how a



The electrohydraulic shaker tests the effects of vibration.

living human would react under similar conditions, a valuable simulation indeed. Obviously, living people cannot ethically be used in overtly dangerous experiments, and unfortunately cadavers do not respond the same as living persons. The necessity for manikins whose performance is based on human dynamic data is essential.

NBDL's official mission is "To be the principal Navy activity to conduct

biomedical research on the effects of mechanical forces (motion, vibration, and impact) encountered in ships and aircraft on naval personnel" With its dedicated volunteers, scientists, and technicians, this unique facility is well on its way toward accomplishing that mission. It is anticipated that the results of this research will be instrumental in significantly reducing mortality and morbidity from these forces. □

Factors in Outpatient Compliance

ENS Ruth Ward, MC, USNR

ENS Mark Daunis, MC, USNR

CAPT Leslie Ellwood, MC, USN

In ambulatory care medicine, completion of prescribed therapy is entirely dependent on patients' compliance with medication prescriptions and care provider recommendations. Outpatient compliance with medication regimens and instructions, affected by numerous factors, (1-8) is often low and results in unresolved illnesses and unnecessary return appointments.

Compliance is affected by elements of the care provider's communications, such as complexity of instructions, (1) physician's detailing medication purposes or emphasizing instructions, (2) providing written instructions, (3) or communication content of key words. (4) Other factors unrelated to diagnostic and therapeutic knowledge are cultural differences between physician and patient, (5) perceived warmth or friendliness of the health care provider, (6) patient's anxiety level, (7) patient's perception of severity of illness, (2) or patient opinion of physician's diagnostic ability, thoroughness, and sympathy. (8)

Studies of patient compliance have repeatedly focused on the verbal communication as the most important component of the physician-patient relationship, (4,9) and most studies have relied on direct observation or videotape to assess effective communication. Examples of assessment of compliance have been followup interview, (6) return appointment compliance, (7) measurement of medication completed in expected time period, (10) and medication urine levels. (11)

The correlation of accurate communication by the care provider of the names and purposes of medication and other essential therapy with

compliance was the subject of an outpatient study at the NRMCC Branch Clinic at NAS Oceana by two Navy medical scholarship students on 45-day active duty for training.

Method of Study

Active duty and dependent patients receiving medical care in the family care, pediatrics, military sick call, and ob-gyn clinics of the NAS Oceana Branch Clinic were the subjects of this study. Two medical students, who had just completed the first year of medical school, observed the total physician-patient interaction, paying particular attention to the care provider communication of diagnosis and treatment recommendations.

After the care provider had completed medical care, the provider would retrospectively state to the student research interviewer diagnosis, medications prescribed and purpose of each, and other essential therapy. The medical student would then immediately interview the patient (parent for pediatric patients) to determine the patient's understanding of diagnosis, recall of medications prescribed and purpose of each, and recall of other essential instructions for treatment of chief complaints.

ENS Ward and ENS Daunis are Armed Forces Health Professions Scholarship Program students who completed 45-day ACU-TRA research clerkships after their first year of medical school during the summer of 1980. ENS Ward is at Bowman-Gray Medical School, and ENS Daunis is at Tulane Medical College. Dr. Ellwood was head of Pediatrics at NAS Oceana Branch Clinic and is now Director of the Physician's Assistant Training Program at the Naval School of Health Sciences, Portsmouth, VA 23708.

After assessing the patient's knowledge of these factors, the student would restate any essential therapy information not recalled. One week later, the patient was contacted by phone and the interviewer assessed patient compliance with medications and other recommended therapy.

The patient's immediate recall and compliance interviews were both scored on a scale of zero to five, with diagnosis scored a maximum of one and medications and therapy recommendation recalls each scored a maximum of two. The data was analyzed using Pearson's coefficient of correlation (r). (12) Care providers received constant feedback concerning communication effectiveness during the period of the study. A survey of patient satisfaction with the clinic experience and the care provider was completed by consecutive sampling of half the patients interviewed.

Results

During a study period of eight weeks, 197 separate communications between health care providers and patients were completely audited for both communication effectiveness (immediate patient recall) and compliance (telephone interview) by the two medical student research interviewers. Clinic experience and care provider ratings were completed by 122 consecutive patients. Health care providers included 13 physicians and 3 nurse practitioners.

The primary diagnosis categories of the patients studied are listed in Figure 1; the age distribution of the patients is described in Figure 2; the sex distribution was 73 males and 124 females.

FIGURE 1. Primary Diagnoses Audited

Diagnosis	Number	Percent of total
Otitis media	40	19
Respiratory infections	30	14
Gastrointestinal	16	8
Musculoskeletal	27	13
Gynecological	20	10
Allergy	20	10
Viral syndromes	13	6
Skin infections	12	6
Headaches	6	3
Urinary tract infections	3	1
Others	17	8
Total*	204	

*Some patients had two primary diagnoses

The results for individual care providers, listed by numbers assigned during the study, are summarized in Figure 3. Pearson's coefficient of correlation (r) was individually calculated for only care providers with n greater than 10 patients, but scores for care providers with n less than 10 patients were also included in the cumulative calculation of r .

The coefficient of correlation between communication and compliance for all 197 audits completed was 0.17. Calculation of the coefficient between communication and compliance for only those care providers with n greater than 10 (169 audits) was 0.24. Both correlations indicate minimal positive correlation. (12)

Using the average communication scores and average compliance scores for care providers with n greater than 10 (169 audits) as listed in Figure 3 to calculate a correlation coefficient, r equals 0.54. This coefficient would indicate a moderate positive relation-

ship (12) when average scores are compared.

Patient satisfaction with clinic experience factors (ease of obtaining appointments, clinic waiting time, facilities, check-in experience, and overall experience satisfaction) and care provider factors (friendliness, adequate explanations, adequate time with care provider, thoroughness, and degree of concern) was uniformly high at NAS Oceana Branch Clinic with an average overall score of 4.8 of a possible 5.0. The variation in this score was insufficient to assess correlation.

The average communication score for all care providers was 4.3 (86 percent of a maximum score of 5), and the average compliance score for all care providers was 4.4 (88 percent of maximum score of 5).

Analysis of the individual patient scores reveals that 93 percent of the patients were aware of their correct diagnosis immediately after the care provider contact; 58 percent knew the

names of all prescribed medications and the purpose of each; 72 percent were able to correctly recall all other physician recommendations. For self-reported compliance, 87 percent had appropriately followed the prescribed medications while 75 percent had completed the other recommendations. The medication communication percentage was depressed by the study design requirement that the patient be able to name medications before they had received labeled medications from the pharmacy.

Implications

Health care provider communication effectiveness, patient compliance, and patient satisfaction as estimated in this audit of provider-patient interactions at NAS Oceana Branch Clinic are highly satisfactory. (1) In this study focusing on effective communication of medications and other therapies, however, effective communication had only low positive correlation with individual patient compliance. On the average, though, care providers with higher communication effectiveness had better patient compliance scores.

The study design contributed to improved care provider communication in that the research interviewer's presence at the provider-patient interaction did remind the provider that communication skills were being evaluated, and the care provider, in providing a learning experience to the student interviewers, would often provide added information also of benefit to the patient's instruction. An additional factor which could have increased compliance was the immediate review of the therapies recommended by the physician and the reinforcement of essential instructions that were not recalled. These elements of the communication interaction make the low correlation more significant.

Of the three elements of the communication assessment, diagnosis was the best recalled. Medication names were most commonly for-

FIGURE 2. Age Distribution of Patients

Age	Number	Percent of total
Neonate-2 years	57	29
2-12 years	43	22
13-17 years	3	2
18-26 years	33	17
27-40 years	52	26
Above 40	9	4
Total	197	

gotten, although purposes of medications were recalled. Inability to specifically name medication did not seem to affect compliance, since patients seemed to rely upon general type and purpose of medications and explicit pharmacy label instructions to determine use. Although the in-

ability of patients to name medications is a common frustration of the outpatient care provider and may cause difficulty in followup care, it may have little effect on compliance.

Other therapy recommendations, such as hot compresses, diet, discontinuance of smoking, rest, or changes

in behavior or lifestyle, were often not immediately recalled and required prompting by the research interviewers. In complying with these instructions, any regimen that inconvenienced the patients' usual lifestyle or daily schedule was less likely to be followed. (6)

Although the significance of these treatment modalities may often be greater for long-term resolution of illness or preventive health practices, the patient bias to focus on prescribed medications is not an unexpected finding. Outpatients often relate that a care provider "did not do anything for me" when medications are not prescribed. (13) Methods of reinforcing these usually verbal instructions of nonmedication therapies must be sought, such as written instructions, (3) assistance in including these treatments in the daily life schedule, or detailed questioning about compliance on return visits.

If outpatient care providers cannot

FIGURE 3. Summary of Study Results

Provider Number	n	Average Scores: Communication	Average Scores: Compliance	Correlation Coefficient	Rating Score by Patients
1	27	4.3	4.7	0.33	4.8
2	14	4.5	4.9	0.31	4.8
3	23	4.4	4.4	0.34	4.9
4	17	4.1	4.1	0.56	4.8
5	28	4.3	4.0	0.13	4.8
6	24	4.5	4.7	0.20	4.9
7	3	5.0	4.8		
8	14	4.2	4.1	0.13	4.8
9	8	4.6	5.0		
10	5	3.8	4.0		4.8
11	10	4.3	4.7	-0.20	4.8
14	2	5.0	4.0		
16	2	4.1	5.0		
19	12	4.7	4.4	0.36	4.7
20	4	4.3	4.8		4.7
22	4	4.8	3.8		4.7

rely upon diagnostic skills, therapeutic knowledge, and effective communication to insure patient compliance with essential therapy, we must pay attention to those factors that previous research has suggested to be of importance. (4-9) Patient factors to be considered must include background knowledge, cultural biases, anxiety, social and environmental forces affecting the patient, and patient's perceptions of care received. These are elements health care providers cannot change, but assessment of these areas would allow for modification of treatment regimens. Such obvious considerations are too often ignored in the busy outpatient setting.

Personal attributes of the care provider (bedside manner) have great significance to patients who must adopt a submissive role in an anxiety-laden trust relationship. Warmth, friendliness, sympathy, awareness, thoroughness, and allowing sufficient time have been reported as important to patients. (4-9)

These physician attributes affecting compliance are perhaps the cause for the occasional contradiction of patients' perceptions of physicians

and professional peer review opinions developed by medical record audits, which only assess the information the physician elects to include in the medical record. Outpatient audits of physician practices may well have to include some assessment of interpersonal skills to provide a reliable judgment of effectiveness.

The environment in which health care is delivered also affects patient acceptance of therapy recommendations. NAS Oceana Branch Clinic has the highly favorable environmental factors of well-designed, new facilities, registration-limited eligible population, all dependent care by appointments only but with relative ease in obtaining appointments, and a highly motivated staff. Patient satisfaction has been consistently high, as reflected in the patient rating questionnaire, and this has a positive effect on compliance. (6)

References

1. Baxter RP, Cunningham OR: Compliance revisited: Further notes on the problem of nonadherence to medical regimens. *Va Med* 106:29-32, 1979.
2. Nelson EC, Stason WB, Neutra RR, Solomon HS, McArdle PJ: Impact of patient perceptions on compliance with treatment for hypertension. *Med Care* 16:893-906, 1978.
3. Ellis DA: Doctors' orders: Controlled trial of supplementary written information for patients. *Br Med J* 1:456-460, 1979.
4. Raimbault G, Cachin O, Lemal JM, Eliacheff C, Rappaport R: Aspects of communication between patients and doctors: An analysis of discourse in medical interviews. *Pediatrics* 55:401-405, 1975.
5. Lowe MJ: Effectiveness of teaching as measured by compliance with medical recommendations. *Nurs Res* 19:59-63, 1970.
6. Francis V, Korsch BM, Morris MJ: Gaps in doctor-patient communications: Patients' response to medical advice. *N Eng J Med* 280:533-540, 1969.
7. Anstett R: The difficult patient and the physician-patient relationship. *J Fam Pract* 11:281-286, 1980.
8. Pearce T, O'Shea JS, Wessin OF: Correlations between appointment keeping and reorganization of hospital ambulatory pediatric services. *Pediatrics* 64:81-87, 1979.
9. Bain DJ: The content of physician/patient communication in family practice. *J Fam Pract* 8:745-753, 1979.
10. Bergman AB, Werner RJ: Failure of children to receive penicillin by mouth. *N Eng J Med* 268:1334-1338, 1963.
11. Charney E, Bynum R, Edredge D, Frank D, Macwhinney JB, McNabb N, Scheiner A, Sumpter E, Iker H: How well do patients take oral penicillin? Collaborative study in private practice. *Pediatrics* 40:188-195, 1967.
12. Arkin H, Colton R: *Statistical Methods*. New York, Barnes & Noble Inc, 1970.
13. Gorske AL: Let's stop prescribing cold medications. *US Nav Med* 67(11):10-13, November 1976. □

Wounded Warrior I

A total of 37 military personnel under the command of NRMC Oakland, CA, participated in "Wounded Warrior I," the largest medical exercise since World War II. It began in the south central California coastal region on 21 May 1981.

The exercise of 4,000 troops involved 34 units, five States, and components of the active Army, Navy, Air Force, National Guard, and Army Reserve, as well as representatives from NATO.

The training period was highlighted by a four-day field training exercise (FTX) 24-27 May 1981, involving four principal sites—Camp Roberts, Fort Hunter Liggett, Camp San Luis Obispo, and Los

Alamitos. The FTX was designed to test the ability of medical units to perform their functions under continuous simulated battlefield conditions. Simulated wounded players received treatment, care, and support as if they were actually wounded. The exercise also tested the capability of medical and support units available to the States in time of emergencies or natural disasters.

Representing NRMC Oakland, the only Navy unit to participate, were five corpsmen from the hospital in Oakland and an additional five from its Moffett Field Branch Clinic, who served on the triage team. Other Navy Corpsmen acted as casualties.

Pride and Professionalism in Perspective

CAPT Paul D. Nelson, MSC, USN

In a year during which renewed spirit of tradition and purpose prevails within the naval service, there is no better theme by which to celebrate the 34th anniversary of our Navy Medical Service Corps than that of "pride and professionalism."

As officers of the Medical Department, our essential purpose is to facilitate the health, fitness, and performance of our Navy and Marine Corps forces in support of their operational readiness. We work toward that end by providing clinical services, expertise in science and technology, and medical logistics and administrative support. We do so with perspective—historical, organizational, and philosophical—the roots of our pride and professionalism.

Historical Perspective

The Medical Service Corps was conceived at a time during which major demobilization was under way in our Armed Forces. A real concern existed that no permanent base of professional experience would be left in our Medical Department. As LCDR R. Erie phrased it, "The need for commissioned officers who were skilled administrators had been well-documented in the 'war to end all wars,' and the experience gained early in World War II demonstrated the same need for officers that were equally skilled in the practice of sciences allied to medicine." (1) The latter, as set forth by ALNAV msg 587 of 7 Nov 1946, included acarology, bacteriology, biology, chemistry, entomology, epidemiology,

genetics, malacology, nutrition, parasitology, physics, physiology, psychology, pathology, mammology, malariology, zoology, public health (industrial hygiene), virology, and public health (medical statistics). (2)

Thirty-four years ago, the first permanently commissioned officers of the new Medical Service Corps were 255 in number, all of whom had former service. (3) The majority (about 80 percent) were in medical supply and administration and they were ranked from ensign through lieutenant commander. Today, the Medical Service Corps has approximately 1,900 officers from rank of ensign through captain, about two-thirds of whom are career permanent officers. Half are professional health service administration officers, about 70 percent of whom have prior military service. The other half is comprised of more than 20 clinical and scientific support professions required by the Medical Department mission. About 35 percent of those officers have prior military service. Our MSC billets are distributed to more than 250 different commands. About 60 percent of those billets are in facilities rendering direct patient care. The others are devoted primarily to operational units or their supporting staffs and commands, including training and research commands, occupational and preventive medicine units, and medical material support activities. Bruder and Butler provide another profile of our officers and their assignments in an article published earlier this year. (4)

Since the history of any institution affords insight in preparing for the future, the MSC Division, BUMED, began two years ago to reconstruct the history of our Corps through

archival search and expert recall, sometimes anecdotal but always subject to verification. Gannon's initial work with the Medical Department archives gave us a start. (5) During the past year, the MSC specialty advisor (a current list is presented at the end of this article) added substantially to that base with abstracted histories of their specialties in our Corps. It is our plan that such histories be published so that all officers might learn more about their professional heritage, a very important part of being able to answer the questions: "Who are we and what are we all about?"

Organizational Perspective

Becoming acquainted with the organization in which one works depends upon his or her initiative. Gaining organizational perspective can also be facilitated by opportunities afforded in watch-standing, correspondence courses, collateral duties, and the assignment process itself. A year ago, I briefly set forth my thoughts on the significance of different forms of assignment rotation in MSC officer development. (6) Variety of commands to which one is assigned is very important, as is variety in levels of professional responsibilities.

In the career planning guidelines to be forthcoming this year for MSC officers, we advance three concepts of officer development and career opportunity: specialty competence, organizational perspective, and position responsibility. The latter embodies the primary objective of career development, namely the preparation of individuals for increasing levels of responsibility within the organization commensurate with progression in

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rank. Education, training, and work experience all serve potentially to enhance the individual's specialty competence and organizational perspective.

A page from history can be instructive again, even in the present context of career planning. There is no evidence that a formal or standard career guideline existed for MSC officers in earlier years. However, there is little question that implicit in the development of those officers were the three concepts of specialty competence, organizational perspective, and position responsibility. A good example is LCDR Daniel J. O'Brien, MSC, the first officer to serve as Head of the MSC Branch, BUMED, six years before the first Chief of the Medical Service Corps was appointed.⁽⁷⁾ For his earlier Hospital Corps career, his officer data card listed as specialty qualifications: personnel, logistics, and legal administrative. He served between 1918 and 1948 as a Hospital Corps School training instructor and administrative officer, a medical administrative officer aboard ship and with the Marines in Nicaragua, at a naval hospital, a medical supply depot, and as a junior and senior division officer at BUMED. During World War II, he was a war plans staff aide to DMO, COM-TWELVE before his return to BUMED. In 1953, he retired from active duty at the rank of commander with over 43 years of naval service . . . and with organizational perspective, par excellence!

There have been other MSC officers, from many specialties who, even recently, have completed meritorious careers with depth of competence and diversity of perspective gained from years of varied experience. And that will continue, for we need leaders in our field commands including senior department heads, who have "the big picture." We must also continue to develop executive staff officers for a broad health care system and operational contingencies planning; medical logisti-



Photo by PFC Ken George

Fleet Marine operational arm prepares for amphibious landing.

cians and intelligence experts; program managers for R&D, training systems, and special projects; resources acquisition and management specialists; and officers at ease in working on fleet staffs and in other joint service commands. All require specialty competence and organizational perspective.

We will continue to emphasize education and training opportunities for junior- and middle-grade officers for their professional specialty development. But in addition, as top priority, we will increase our emphasis on training for contingency readiness in critical areas of field medical support tactics, medical logistics, environmental safety and

control, and medical intelligence. During the past year, our quota at the Marine Corps Amphibious Warfare School was increased, and, at this writing, new short courses on field medical support are being planned. As officers reach the middle- and senior-grade levels, emphasis will be placed on their preparation for executive staff and field command responsibilities. Within the past year, several new billets came on line at executive levels of OASD, OPNAV, NAVMAT, SYSCOMS, and ONR, requiring MSC officers of different specialty backgrounds and of broad perspective and general staff officer competence. To meet such increased requirements, we obtained approval



Many MSC officers are assigned to operational units and the fleet.

this year to double our MSC quota at both the Armed Forces Staff College (AFSC) and the Marine Corps Command and Staff College (MCC&SC). We are presently seeking a regular annual quota for MSC officers at the Industrial College of the Armed Forces (ICAF). On a very steady basis, our senior officers with others of the Medical Department are selected from all professional specialties to attend the Advanced Health Policy and Planning Course (AHPPC) for executive development. These are opportunities second to none!

Organizational perspective is what it's all about. In the words of RADM Edward F. Welch, Jr., USN, President of the Naval War College:

One of the basic aims of the Naval War College is to change the perspective of a mid-career technically trained officer into a broad-gauged naval tactician and military strategist Since by the time officers are eligible to come to the Naval War College they have learned the bulk of the technical side of

their respective service, the War College experience is designed to broaden the student's vision and develop an appreciation of the other factors that are of major significance to people in senior command and policy-making positions. (8)

Such philosophy portrays a commitment to the future, to executive leadership, and professionalism in staff and command.

Philosophical Perspective

Commitment to the future is the dynamic aspect of pride and professionalism. Founded on respect for one's heritage and a knowledge of one's current mission, it is put into action by a sense of dedication to a system of values and goals, personal and corporate, which ultimately have to do with the purpose in our lives. It is the philosophical perspective from which the attitudes and actions of pride and professionalism flow. In addition to matters of personal honor and integrity, to the ethics and principles of our different professions, and the meaning of the oath by which we serve, the system of values which

undergirds our pride and professionalism has a lot to do with the rhetorical question: "Why am I in the Navy, at all?"

Each of us is influenced from time to time, if not all the time, by the reality of material rewards, social and working conditions, and other aspects of our environment. The challenge in our work, feeling that we are contributing something important, and having opportunity for professional growth and responsibility are also important to us. Butler and Bruder describe the attitudes of MSC officers on these issues in an earlier article. (9) Those values and aspirations, however, are not unique to military service. To be a naval officer is different. It is a unique privilege and responsibility. It implies a commitment to the future of our nation and its defense, a commitment founded on values which in most instances are beyond those of simply advancing one's professional career or personal well-being. I am talking about a philosophy of life, about values which become matters of personal character, morality, and faith. They are, to me, the "guts" of



CDR W. Thomas, MSC, environmental health officer, directs restoration of water system in the Dominican Republic in September 1979.

our pride and professionalism, the heart and soul as well!

A call to duty, honor, and country is not old-fashioned. It is a call to serve, as contemporary as any in a society in which military service has never been especially popular, even in times of conflict. Charles Moskos, who has published many scholarly works on military sociology, wrote about public opinion and the Military Establishment: "Americans gave the Second World War unparalleled backing. No other military conflict in which the United States has been involved, before or since, has equaled it." (10) And yet, in each era of our history, we have had the leadership when needed and the dedicated service of those who stepped forward. It is in difficult times, when military service is not required but voluntary, that a spirit of hard-earned pride and professionalism is so vital. VADM James B. Stockdale, USN, near the

end of his tour as President of the Naval War College, put it succinctly in one of his many essays on moral philosophy and leadership: "The test of character is not 'hanging in there' when the light at the end of the tunnel is expected but performance of duty and persistence of example when the situation rules out the possibility of the light ever coming." (11)

Having been the senior officer among the American prisoners of war in Southeast Asia, VADM Stockdale had lived the meaning of those words. Such extraordinary courage under the most inhumane circumstances is not common. And yet, it is that same personal code of honor by which so many others have served our Nation heroically and sacrificially over the years, including men and women of the Navy Medical Department, officer and enlisted, all of whom represent the epitome of pride and professionalism.

That spirit of commitment to something greater than oneself, is not limited to generations of the past or only to those of uncommon valor or sacrifice. It continues today wherever our men and women serve. Despite the generational differences, I see the special sense of pride and professionalism in the new graduates of Officer Indoctrination School at Newport. I hear it in talking with our officers serving aboard ship, and read it in their letters and the articles they publish. Those who are with the Marines reflect the proud tradition of all who serve that Corps. In hospitals, clinics, headquarters staffs, schools, commands, special training units, research labs, and environmental health support activities, I observe the professional enthusiasm and proud commitment of our junior and senior officers. It grows with time and experience, as our MSC survey suggests. (12)

Among our Medical Department leaders, there is absolutely no difference in the spirit of pride and professionalism between those who serve in comparable positions of responsibility on active duty and with the inactive Naval Reserve. That pride and professionalism is in each instance the result of years of experience, sacrifice, and achieved competence coupled with a sense of history, a firsthand knowledge of what we're all about, and an unreserved commitment to see it through.

That's how I see it on this 34th Anniversary of the Navy Medical Service Corps. It is a time to be proud of where we've been, proud of where we are, and proud of where we're going, as a nation, a naval service, a Medical Department, and a professional staff corps of officers. Happy anniversary—and keep the faith of those who served so proudly before.

References

1. Erie R: The Navy Medical Service Corps: Whence and whither? *US Nav Med* 60 (2):22-28, August 1972.
2. *BUMED News Letter* 8(11):38, Nov 22, 1946.
3. *Hospital Corps Q* (supplement to the *US Nav Med Bull* 20(4):5, Oct-Nov-Dec 1947.
4. Bruder T, Butler MC: The Medical Service Corps officer survey: Who responded? *US Nav Med* 72(2):3-5, February 1981.
5. Gannon H: A history of the Medical Service Corps of the United States Navy. Unpublished manuscript, Dept of the Navy, Bureau of Medicine and Surgery (MED 23), Aug 30, 1979.
6. Nelson PD: Your career as an MSC officer. *US Nav Med* 71(8):10-14, August 1980.
7. *Hospital Corps Q* (supplement to the *US Nav Med Bull* 21(3):7, July-Aug-Sept 1948.
8. *Naval War College Catalog* (1981-82), Dept of the Navy, Naval War College. Newport, 1981, p 3.
9. Butler MC, Bruder PT: Life-stage career concerns among MSC officers: Dimensions and occupational differences. *US Nav Med* 72(4):13-18, April 1981.
10. Moskos CM (ed): *Public Opinion and the Military Establishment*. Beverly Hills, Sage Publications, 1971, p x.
11. Stockdale JB: Taking stock. *Nav War Coll Rev* XXXII(4):3, July-Aug 1979.
12. Butler MC, Bruder PT, Jones AP: MSC survey results: Organizational commitment. *US Nav Med* 72(6):16-21, June 1981. □

1980-81 MSC Specialty Advisors

Health Care Administration and Program Advisors

CAPT F. Anderson (Planning and Programming)
 CAPT L. Angelo (Management Information Systems)
 CAPT E.R. Christian (Recruiting Program)
 CAPT R. McCullagh (Fiscal/Supply)
 CAPT H. Sowers (Patient Services)
 CAPT R. Tandy (Internal Audit Systems)
 CDR R.E. Campbell (Naval Reserve Programs)
 CDR A.S. Dasler (Fleet Health Care [general])
 CDR A. Frost (Food Service Management)
 CDR G. Harris (Marine Corps [general])
 CDR J.J. Kehoe (Dental)
 CDR L.R. Maassen (Manpower Programs)
 CDR L. Moore (Quality Assurance)
 CDR R. Morin (Facility Operations [general])
 CDR D.E. Wood (Research and Development)
 LCDR J.L. Higgins (Education and Training)
 LCDR T. Ruffin (Human Resource Management)

Clinical Health Care and Science Advisors

CAPT P. McKelvy (Dietetics/Phys Therapy/Occup Therapy)
 CAPT R. Poquis (Optometry)
 CDR W.M. Beckner (Radiation Specialties)
 CDR R. Biersner (Physiology and Research Psychology)
 CDR D.E. Collings (Medical Technology)
 CDR P.M. Curran (Aero Psychology)
 CDR R. McCullah (Clinical Psychology/Social Work)
 CDR W. McIntosh (Aero Physiology)
 CDR R.J. Park (Podiatry)
 CDR R. Peterson (Entomology)
 CDR L.R. Smith (Pharmacy)
 CDR W. Thomas (Environmental Health)
 CDR D.E. Uddin (Chem/Biochem/Pharmacol)
 CDR D. Woodman (Microbiology/Bacterial/Parasitol/Virol)
 LCDR D.A. Macys (Industrial Hygiene/Audiology)

Medical Service Corps Division, BUMED

CAPT P.D. Nelson
 Director, Medical Service Corps
 CAPT D.R. Ferguson
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 CAPT A.C. Hatten
 Deputy Director for Health Sciences
 CDR S.J. Profita
 Head, Requirement and Career Planning Branch
 LT J.P. Harrison
 Head, Procurement Programs Section
 HMCS J. Hood
 Administrative Assistant to the Director

HSETC: It's Not What You Think

HMCM Curtis A. Crocker, USN

It's known as the Tower, a part of the old hospital at the National Naval Medical Center (NNMC) and a prominent landmark in suburban Bethesda, MD. It is also the executive home of the Naval Health Sciences Education and Training Command (HSETC). The Bureau of Medicine and Surgery (BUMED) established the command in 1974 to manage education and training programs for the Navy Medical Department. Until recently, the extent of its capabilities have for the most part gone unnoticed.

RADM Frances T. Shea, NC, HSETC's Commanding Officer, mentioned that, among a number of concerns, one serious issue was how the operational fleet perceived the role of

her command. "I must admit, that when I first came here in August 1980, I had to learn very quickly what went on." She did. Since that time, she has made innumerable official visits, and through Navy directives, Medical Department personnel have become aware of the role and resources available to them at HSETC. Some of her primary objectives include effecting improvements needed to insure total operational readiness, being more responsive to the needs of the Medical Department, and working more closely with other education commands such as the Chief of Naval Education and Training (CNET) as well as with the Army and Air Force.

As its responsibilities have in-

creased in the few years of its existence, so has the need for resources. The command now occupies the 14th through 18th floors in the Tower and buildings 141 and 144. Twenty-three officers, 36 enlisted personnel, and 54 civilians comprise the staff. To support its many programs, HSETC's budget has grown from an initial \$3 million to almost \$85 million for the current fiscal year.

This funding encompasses the Armed Forces Health Professions Scholarship Program (HR2), full and part-time outservice training, short courses for continuing education, instructional and curriculum development for Medical Department schools, and complete medical and audiovisual support for all educational programs.

Naval School of Health Sciences

A close look at one of its training facilities, the Naval School of Health Sciences, San Diego, CA, reveals four types of training. At the first level is the Basic Hospital Corps School. The curriculum contains 10 weeks of combined didactic and practical instruction including two days of clinical experience. The second type is the Advanced/Clinical or Class "C" School. There are 14 of these schools including Advanced Hospital Corps, Cardiopulmonary Technician, Clinical Nuclear Medicine Technician, and Medical Laboratory Technician. The third is a one-year physician's assistant training course leading to a commission as a warrant officer. The fourth includes several refresher courses, such as the 10-day modular course for senior petty officers bound for independent duty. The



RADM Frances Shea, NC, conducts a morning planning session with her staff. (Right to left): CAPT Robert Elliott, MC, Dr. Mortimer Lockett, RADM Shea, CAPT Daniel Brandon, MSC, and LCDR John Kelly, MSC.

(Right): HM2 Charles P. Runyan films a mock operation for a training production.





HM2 Cynthia Foutch prepares to shoot a negative from an x-ray in the NNMC Medical Photography Copy Section.

command also operates basic and technical schools for dental technicians, among them Dental Assistant Basic and Advanced and Dental Repair Technician.

In addition to basic and advanced schools, enlisted personnel may apply for research projects under the Clinical Investigation Program. Also available are conferences, seminars, workshops, and refresher training such as that offered to biomedical repair and environmental sanitation technicians. There are also the Field Medical Service schools which train enlisted personnel for duty with the Fleet Marine Force and a few specialty training schools such as Undersea Medicine and Aviation Physiology.

Part-time outservice training (tuition assistance) is gaining momentum in the enlisted community according to LT Robert Boott, MSC, Director of Hospital Corps Programs and DTCS

Kenneth May, Director of Dental Technician Training. Both emphasize the importance of taking advantage of this opportunity. Their main concern with the program, however, is that many applications arrive late or contain errors and have to be disapproved. Commands should forward requests within 20 days of the commencement of the course. HM2 Coleen Ryan of the Hospital Corps Programs Department insisted, "It's unfortunate we have to disapprove so many but commands need to follow the instruction very carefully." She encourages career counselors and personnel in education and training departments to use BUMEDINST 1500.7D.

Medical Corps Programs

Discussing the medical officer community with the Director of Medical Corps Programs, CAPT Charles

Mock, MC, revealed that the Navy is getting close to its ceiling of 3,600 physicians. "Our problem has really been in the mixture. We need to attract and retain more in the critical specialties such as surgery and orthopedics," he pointed out. He plans to make Navy practice as satisfying as possible by recommending improved bonuses, continuation pay, and other allowances that would counteract the exodus of physicians to private practice.

Dr. Mock's department manages the Clinical Investigation Program (CIP) which offers physicians and other medical personnel the opportunity to perform research projects (protocols) involving clinical problems in the health care of the military community. Normally things proceed routinely but errors or omissions in application requests cause serious delays in processing. Dr. Mock sug-

gests applicants follow guidelines in BUMEDINST 6000.4C.

Dr. Mock coordinates other training for physicians including the Navy Graduate Medical Education Program (residency training). The Surgeon General's Specialties Advisory Conference meets each September to select training candidates. For those physicians who desire consideration, he suggests they refer to BUMEDINST 1520.10G and BUMED Notice 1520 when preparing applications. Other training opportunities available include:

- Basic and refresher courses in aerospace medicine
- Undersea medicine and radiation health
- Inservice/outservice fellowships
- Executive medicine courses
- Short courses essential to specialty training
- Meetings, conventions, and seminars

Another titanic task of Medical Corps Programs is the management of the Armed Forces Health Professions Scholarship Program (AFH-

PSP), the primary door by which recent medical graduates enter the Navy. Participants hold inactive reserve commissions as ensign (O-1). The program provides full scholarship support for students undergoing civilian training in medicine, osteopathy, clinical psychology, and optometry. AFHPSP pays all costs for tuition, fees, equipment, and books. Additionally, it provides the student a stipend of \$453 per month for ten and one-half months and pays full ensign pay and allowances for 45 days active duty for training (ACDUTRA) each year. There are over 100 schools and 1,575 students participating. Each student, upon graduation or completion of further training, i.e., internship, residency, serves a minimum of three years on active duty.

During their first year, the students perform ACDUTRA at Newport, RI, for officer indoctrination. The second year they take part in a research clerkship at their own school or one close by. The third and fourth years, the students travel to the naval medical facilities of their choice with San Diego, Pensacola, Bethesda, and Portsmouth being the most popular.

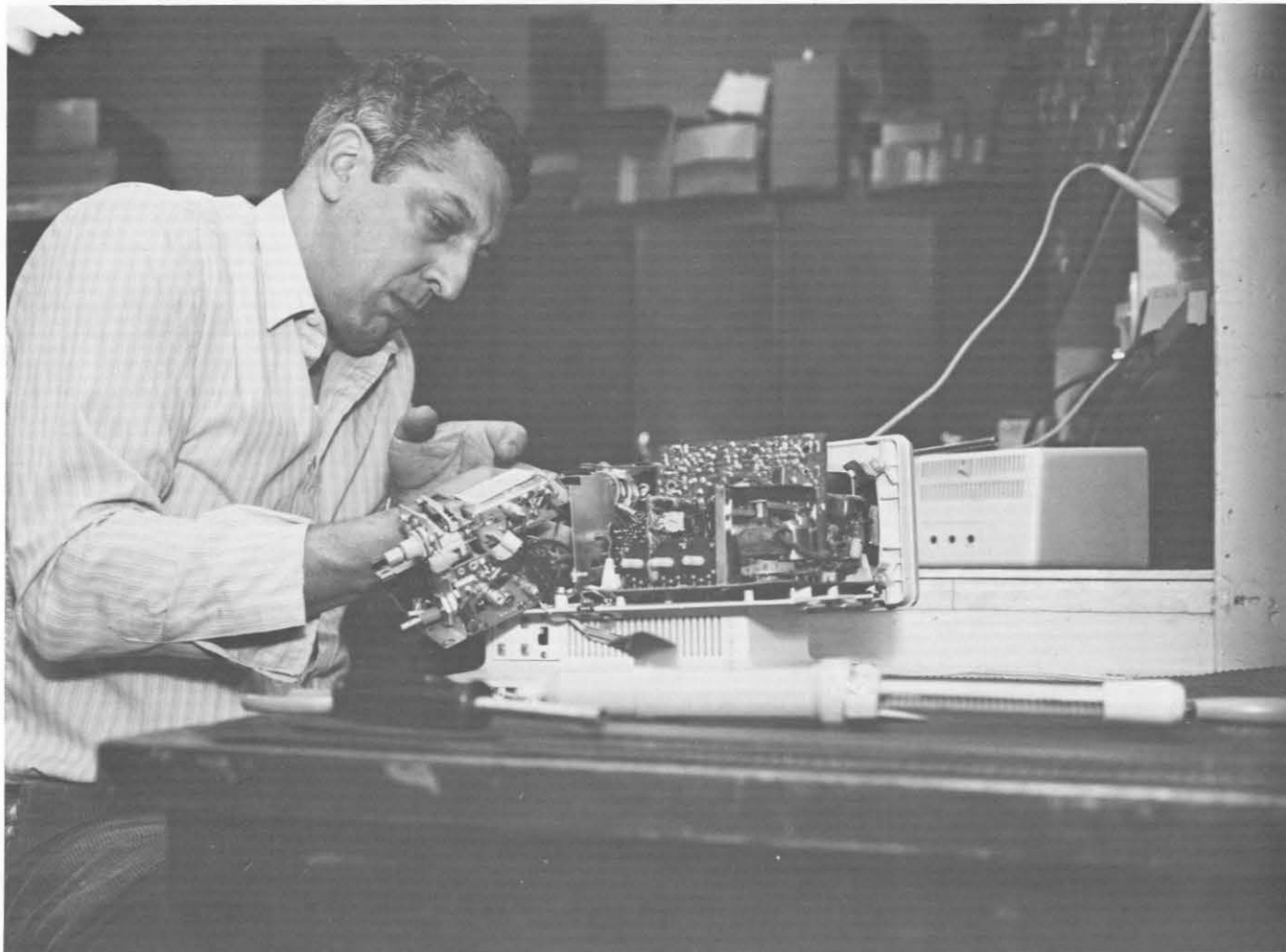
Nurse Corps Programs

CDR Frances C. McKown, NC, Director of Nurse Corps Programs, administers 87 billets in full-time outservice undergraduate, graduate, and anesthesia education. This program offers study toward a baccalaureate or master's degree. The nurses attend civilian institutions and continue to receive full pay and allowances. "Often, people get so involved in their everyday workloads and problems, it becomes easy to undervalue education. But, it touches everything we do and for this reason, I try to make our programs well-known to all commands," said CDR McKown. She keeps the nursing community aware of benefits available in several ways:

- Periodic letters to chief nurses at medical facilities



Stella Velis fills a request from the HSETC film library.



HSETC has a large inventory of audiovisual equipment to maintain. Here, Ralph Buonomo troubleshoots a TV monitor circuit.

- Occasional articles in Navy publications
- Revisions of the Manual of the Medical Department
- Announcements by the Director of the Nurse Corps during official visits

The Director of Nurse Corps Programs also administers inservice nurse practitioner, clinical anesthesia, and naval postgraduate school programs. Additionally, part-time outservice education is available as well as continuing education programs including meetings and seminars.

Dental Corps Programs

The Dental Corps has 23 graduate education residency billets in oral surgery and general practice for

dentists with career patterns and who serve in operational billets. The division, headed by CAPT Aubrey Bourgeois, DC, also manages some 14-16 short continuing education courses a year at Bethesda and 10-15 at San Diego. These courses include meetings, conferences, conventions, and seminars, and BUMEDINST 4651.1B encourages each dentist to consider a request annually. The division also conducts the longest standing Medical Department Casualty Care Program at Norfolk, Great Lakes, Pearl Harbor, and San Diego, for all junior dental officers ordered to sea duty or overseas. There is also a refresher course for all career dentists at five-year intervals. Also available are postdoctoral fellowships and dental executive courses.

Medical Service Corps Programs

The Medical Service Corps Programs Division, under the direction of LCDR Jan Higgins, MSC, manages a full-time training program including a podiatry and pharmacy residency, courses in health care administration, financial and supply, management, and patient services. Courses are available at the Naval Post Graduate School, Armed Forces Staff College, War College, Field Medical Service School, and training in civilian institutions such as the Health Care Administration Program at Baylor University. There are clinical psychiatry internships and courses at the Marine Corps Development and Education Command. The division also supervises part-time outservice training, continuing edu-

cation, and requests for funding of professional board examinations.

Operational Readiness

A tremendously important area now commanding attention at HSETC is operational readiness. The Navy now sends 40 to 45 Medical Department officers to each of the 10 annual sessions of the Tri-Service Combat Casualty Care Course (C4).^{*} This course, at Fort Sam Houston, TX, has graduated 250 Navy physicians to date.

Medical personnel also receive cold weather training and a recent emphasis seems to be toward desert warfare. Several of the sites for cold weather training are the mountains of California and Colorado. The deserts of the southwest provide the environment for desert training.

The Fleet Hospital Program is also on the horizon.^{**} This concept will give the Navy a movable pre-constructed hospital that would provide tertiary care behind combat lines. Dr. Mortimer Lockett, principal civilian advisor to RADM Shea, indicated that some 25 projects are in progress and he is concerned about continuous upgrading and maintenance of the training programs. "The medical curriculum must respond to changes in the world picture and improvements in the state of the art. One year the emphasis may be cold weather training and the next we may be asked to shift to the desert. It's a never-ending job to stay current." The Navy now feels medical combat personnel need to know how to survive the elements as well as care for the sick.

Instructional Department

The Commanders in Chief of the fleets and the Commandant of the Marine Corps revise their expectations of the Medical Department in combat and operational roles through the Secretaries of Defense and Navy.

This revision goes to BUMED where it is prepared for implementation by HSETC. At this point, the Instructional Systems Department, under the direction of CAPT John Anderson, DC, performs a task analysis to list the things done in the performance of the existing job or in the one they will create. From this list, experts eliminate all but the essential ones. The staff then determines the cognitive material needed to teach performance of the desired task. The department, in close coordination with HSETC schools, develops objectives, both terminal and enabling, and establishes criteria to evaluate the students. This may be in the form of a test or a practical experience. HSETC sends this new instructional package to a training site which incorporates it into the existing curriculum.

Resources Management

The department that ties the command together is the Resources Management Division. Its past Director, CDR (then LCDR) John Kelly, MSC (now under the direction of CDR Jack Rausch, MSC), indicated that in the past HSETC looked more toward BUMED for guidance but now takes an active role as the program manager for education. He uses a four-phase approach in controlling such vast resources:

- Planning—this extends up to five years in consonance with DOD
- Programming—using available resources
- Budgeting—planned spending for current fiscal year
- Executing—using resources made available

CDR Kelly plans most projects such as the Fleet Hospital Program two to three years in advance of implementation, though often a task requires immediate attention. "In this situation we can usually shift enough money to cover the contingency and not lose credibility in other training programs," he said. His

staff conducts a mid-year review to assess resource utilization and determine if more are needed. "Believe it or not my biggest problem is convincing people that they can do with what they have," he added.

Support

An aspect of HSETC that deserves special attention is its support services capabilities. The Publications Management Department drafts and edits all official documents. The Training Documents Branch publishes correspondence courses and training manuals. The Medical Illustration Department provides medical illustrations and graphics for physicians' use in papers and publications. The Audiovisual Department, in addition to constructing and delivering medical exhibits for recruiting and retention purposes, maintains up-to-date videotape programs for training purposes in the Stitt Medical Library at NNMC and a film and videotape library on most medical subjects for use in the fleet. Medical Photography provides photographic support for medical personnel and assists in the production of original films and videotapes. At the direction of recent DOD consolidation efforts, all audiovisual work is now reviewed and approved by the new Medical Audiovisual Management Office (MAV-MO), under the direction of Mr. Frank Toth.

The film library is indeed large and contains over 600 films on most medical subjects. It circulates 7,000-10,000 films and videotapes annually to health care institutions worldwide, both military and civilian. There are no fees involved for this service other than postage. "Though the fleet is moving toward videotape capability, 16mm films are still our biggest item," offered Janet McLure, the Chief of Audiovisual Resources. She advises customers to use the Medical Film Catalog 1974 Edition (with 1981 addendum) and the Medical Videotape Catalog for current inventory listings. The library partici-

^{*}See *U.S. Navy Medicine*, June 1981.

^{**}See *U.S. Navy Medicine*, September 1980.



In HSETC's TV studio, Clinton Sexton adjusts input to videotape recorder from the master control switcher.

pates in the Defense Audiovisual Information Service (DAVIS) at Wright-Patterson AFB, Dayton, OH. This allows HSETC to make available to its users any film acquired or produced by DOD.

"The films we make are for instructional purposes," said Mr. Kenneth Hammel, Chief of the Education Media Division. "They seem to complement what we stress in the classroom," he added. HSETC tries to avoid obsolescence and produces 30 original shows a year. It receives requests for over 500 copies of them.

Commands desiring an audiovisual project should submit a request using BUMEDINST 1551.1C and describe the purpose and intended audience.

One of the most impressive func-

tions of the Medical Illustration Department is the construction of exhibits used in recruiting, meetings, and conventions. Mr. Richard Hasbrouck, medical illustrator, insists that it takes about 35 days to move from the initial concept to the finished product. He receives a request, usually from a command or a physician, and begins with preliminary drawings. He then refines the idea. The next step is the construction of a miniature model which the requestor must approve. At this point, Hasbrouck constructs the full-scale model which an audiovisual specialist delivers to the desired site. Six to seven projects are usually in progress or waiting to be done. Medical personnel requiring this type

of support need only submit a written request to HSETC.

Being responsive to the needs of the Medical Department and effecting improvements in operational readiness are what this unique and very diversified command is all about. Like a scenario from one of its films, a typical day at HSETC ends as the sun begins to set and the Tower casts a long shadow on the ground. Today, the staff satisfied the needs of many personnel and field activities, finished an exhibit for use at a medical convention, and helped another command become operationally ready. Its dedicated staffers know the next day will give them another chance to prove that HSETC is not what you think. □

Bacteria and Fungi Destruction in Boots and Shoes

LCDR Richard B. Oberst, MSC, USN

LCDR Ronald A. Warcholak, MSC, USN

Shoes or boots provide an ideal environment for the propagation of many types of bacteria, yeast, and fungal organisms. The internal environment of a shoe or boot is warm, moist, and dark. Furthermore, boots or shoes, with the exception of those made of canvas, are the only articles of clothing that are never washed.

The foot is unique because of the large density of microorganisms found there. In the toe webs, this density can be greater than 10^6 bacteria per sq. cm. This is an even greater density than what may be found in the axilla. The protective acid mantle of the pedal skin is compromised by this large bacterial density, metabolizing a large amount of urea and other nitrogenous compounds to form ammonia. The protective acid mantle of the pedal skin is further compromised by the low availability of carbohydrates which limits acid production. The thesis that microbial colonization on the skin is prevented by a protective acid mantle does not seem to apply to a foot that is housed in a shoe all day.

The flora of the pedal skin is also complex. This is attested to by the complex interaction between microorganisms on the skin of the foot. Bacterial infections often complicate fungal foot infections, and the medical concept that only a single organism is responsible for a skin infection of the foot must be discarded. (1) It should also be mentioned that this

complex interaction of microorganisms is drastically altered whenever a patient receives antibiotics.

Podiatrists and dermatologists treat a myriad of infectious skin conditions of the feet. They often meet with marginal success as many of these skin conditions reoccur. One reason for this significant reinfection rate may be linked to the contaminated boots or shoes worn by infected patients. It is our opinion that the internal environment of the patient's footgear must be considered in the total treatment regimen.

Treatment

Shoes or boots may be decontaminated by subjecting the footgear to formalin (formaldehyde 36-38 percent) vapors. This method is a modification of the basic method advocated by earlier podiatrists and mycologists. The materials are readily available, the method easy to follow, and the results very effective.

Shoe/boot decontamination kit contains:

- 1 jar containing (4) formalin-soaked cotton balls
- 1 rubber band
- 1 double plastic bag

Formaldehyde is very irritating to skin, mucous membranes, and eyes. Avoid breathing vapors. Formaldehyde is suspected of being a carcinogen. Work in a well-ventilated area.

Place contaminated boots or shoes into the double plastic bag along with the uncovered jar of formalin-soaked cotton balls. Seal the bag with the

rubber band. Keep sealed for at least 48 hours. After removing the boots or shoes, replace the jar lid and discard. Place decontaminated boots or shoes in the open air for 24 hours before wearing.

Laboratory Evaluation of Kit Effectiveness

Black Corfam shoes were cultured immediately after removal from the feet and again after 24 and 48 hours of exposure to formalin fumes. Sterile cotton swabs were premoistened with sterile physiological saline and used to collect specimens from the inside upper surface and inside soles of the shoes. Collected organisms were immediately plated on five percent sheeps' blood agar (BAP), chocolate agar (CAP), and Sabouraud's dextrose agar. Bacterial cultures were incubated at 37° C and fungal cultures at 25° C and 37° C. After the initial cultures were collected, the shoes were placed in a double plastic bag with a jar containing gauze soaked with formaldehyde solution HCHO 36-38 percent. Shoes unexposed to formalin were also cultured at 0, 24, and 48 hours after removal.

Cultures of *Staphylococcus aureus*, *Escherichia coli*, and *Pseudomonas aeruginosa* were exposed to formalin for varying periods of 0, 24, 48, and 72 hours at 25° C, and then incubated at 37° C to observe the effect of formalin in killing these organisms. Cultures of fungi (*Trichophyton mentagrophytes*, *Trichophyton rubrum*, *Microsporum audouinii*, *Candida tropicalis*, *albicans*, and *stellatoides*) were also exposed to

LCDR Oberst is staff microbiologist at NRMCC Oakland, CA 94627. Lcdr Warcholak is a podiatry resident at the same activity.

formalin for varied periods as described above to evaluate its effect on their viability.

The bacteria (*Pseudomonas aeruginosa*, *Staphylococcus aureus*, and *Escherichia coli*) exposed to the formalin incurred significant kill rates after 24 hours of exposure and cultures were rendered entirely nonviable after 48 hours of exposure. All fungi tested with the exception of *Trychophyton mentagrophytes* were rendered nonviable after 48 hours of exposure.

Shoes cultured immediately after removal from the feet yielded significantly large amounts of normal skin

flora including diphtheroids, staphylococcus species, micrococcus, bacillus species, and yeast, mostly *Candida albicans*. After the shoes were exposed to formalin for 24 hours, the organisms were reduced by approximately 60-75 percent and no viable organisms were recovered after 48 hours of exposure. In contrast, shoes left at room temperature unexposed to formalin yielded a reduction in viable organisms of only approximately 25 percent after 48 hours.

The only organism not destroyed was *T. mentagrophytes*. It was not possible to test all types of footwear

worn by Navy and Marine personnel. However, we believe that our results can be applied to all footwear. We did not see any deleterious effect on Corfam or leather shoes exposed to formalin vapors up to 48 hours. Footgear decontamination kits may be made up in quantities and dispensed by prescription from pharmacies, or kits may be kept in clinics where footgear is decontaminated under watchful supervision.

Reference

1. Samitz MH, Dana AS: *Cutaneous Lesions of the Lower Extremities*. Philadelphia, JP Lippincott Co, 1971, p 23. □

Skin Lesions and Radioactivity in Jewelry

FDA is alerting physicians and other health professionals to suspect a radiation etiology in chronic skin lesions associated with the wearing of gold jewelry if these lesions do not respond to conventional therapy.

Spent radon seeds made of 24K gold and contaminated with the radon daughter products lead-210 and bismuth-210 have apparently been used to make or repair jewelry. (1) Early case reports in which individuals wearing contaminated rings developed chronic radiodermatitis and one squamous cell carcinoma of the finger appeared in the late 1960s. (2-4)

As of January 1981, 12 cases of dermatitis and other health problems associated with gold rings had been reported to the New York State Health Department. An article in the medical press (5) reporting a recent additional occurrence of squamous cell carcinoma renewed interest in this problem. Since the article was published, the State of New York has established a reporting system for radioactive jewelry.

Thus far, officials have located

in western New York State and northern Pennsylvania a total of 47 radioactive rings. While medical investigation of the recently located rings is incomplete, at least some of them have been associated with clinical findings, according to the New York State Health Department. It is possible that radioactive jewelry may be found in other areas of the country as well, because at one time 30 to 40 radon generators were in operation in scattered locations throughout the United States.

According to case histories, lesions resembling contact dermatitis may appear as early as one year after initial exposure. This condition may be consistent with radiation dermatitis. Squamous cell carcinoma has been found in at least two cases, one of which involved a ring giving the highest radioactivity measure thus far.

The lesions are produced after prolonged contact—usually of many years—with the jewelry. It is also possible for lesions to appear or become malignant after cessation of exposure to radiation because of the lengthy latency as-

sociated with long-term radiation effects. In some cases, residual conditions have persisted for more than 20 years after the rings were no longer worn.

The radiation dose rates at the point of contact vary widely. Reports of dose rates range from 2 to 900 mrad/hr. If a piece of jewelry is suspected in a patient's skin condition, health professionals can contact their state radiological health agency or local nuclear medicine laboratory to have it checked for radioactivity.

References

1. Boggs RF, Schmidt GD, William KD: Radiological health aspects of spent radon seeds. *Radiological Health Data and Reports*, DHEW, 10(5), May 1969.
2. Leone RA: Radiodermatitis caused by a radioactive gold ring. *JAMA* 206(9): 2113-2114, 1968.
3. Gerwig T, Winer MN: Radioactive jewelry as a cause of cutaneous tumor. *JAMA* 205(8):123-124, 1968.
4. Simon N, Harley J: Skin reactions from gold jewelry contaminated with radon deposit. *JAMA* 200(3):166-167, 1967.
5. Ring Finger Sore? Check for "hot" Gold. *Medical World News*, 5 Jan 1981. —Reprinted from *FDA Drug Bulletin* March 1981.

The Military Aviator With Renal Stone Disease

CDR D.F. Lynch, Jr., MC, USN

CAPT W.E. Clayton, MC, USN

Shortly after this article was written, Navy policy regarding renal stone disease was revised and now very closely resembles what the authors propose.

Because the Department of Defense may invest up to \$950,000 in the training of a single military aviator, and because the recent exodus of large numbers of aviators from all the services has created a shortage of experienced military pilots, the loss of any aviation personnel due to health has become an increasingly important problem.

The potentially disastrous consequences of sudden incapacitation of flight personnel due to renal colic are recognized, but actual instances of such incapacitation are not well-documented in military or civilian aviation records or in the medical literature. The experience of the authors and that of others in the military aviation community suggests that renal colic occurring during flight operations is a rare event. Although four instances of in-flight disability from acute renal colic have been reported in the civilian literature, no documented case of a fatal or nonfatal accident owing to renal calculus is known. (2) Although statistics on calculus disease among military aviators is sparse, the incidence of calculus in the aviation community appears to parallel that of the general population—roughly one hospital admission per 1,000 people per year. (5) Actual incidence is probably less, as applicants for flight training who have metabolic disorders predisposing to calculus disease will often be detected in a screening physical examination. Some disorders—gout, hyperparathyroidism, neoplasm, infection, and anatomic abnormality—may initially go undetected or may develop subsequent to aviator designation. As in the general population, the largest group of aviator stone-formers are those with “idiopathic” calcium oxalate stone disease.

The regulations now in effect which govern military aviators with calculus disease are given in Table 1.

Following a single episode of renal stone, an Air Force or Army aviator with no radiographic evidence of other calculus may fly again at once. A Coast Guard aviator, however, is grounded for six months, and a Navy flier for a full year. Additionally, Navy fliers are to be placed in Service Group III (SG III)—restricted to dual-place aircraft with a qualified pilot at the other controls—for six additional months. Uniformly, the regulations of all the services direct permanent grounding for episodes of recurrent calculus, retained calculus, or bilateral calculus. (7,8,9,10)

In actual practice, these regulations frequently are not observed to the letter. Following an initial or subsequent episode of stone, if IVP is normal, the aviator is usually returned to flight status in each of the services. The extent of additional evaluation varies widely depending on the experience, interest, and motivation of the local flight surgeon, from an IVP alone to a full metabolic evaluation. No guidelines for followup of the aviator with a history of stone have been established and interval evaluation is sporadic. The wide variability in the evaluation and management of the stone-forming aviator among the various services and within individual services results in part from regulations, which are not based on modern clinical concepts of renal stone disease. In the interests of providing uniform specific minimum guidelines for the evaluation of aviator personnel with calculus disease, the program presented here has been recommended to the Surgeon General of the Navy for Navy-wide use.

Evaluation

A designated aviator with his first episode of calculus, an incidentally discovered calculus, or a history of calculus not previously evaluated should undergo a basic screening evaluation by a flight surgeon or a urologist as outlined in Table 2. These tests should be performed with the aviator on his usual diet. Urine pH should be determined on a random sample using an electric pH meter. The 24-hour urine collection should be at least 1,000 cc in volume and contain at least 1,000 mg of creatinine. This should contain not more than 200 mg of

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TABLE 1. Current Regulations Governing Aviation Personnel With Renal Calculus Disease

Service (Regulation)	First Episode	Successive Episode, Retained Calculus, Bilateral Calculi
Navy/Marines (OPNAVINST 3710.7J)	Ground 12 mo SF III 6 mo	Permanently Grounded
Army (AR 40-501)	Up After Normal IVP	Permanently Grounded
Air Force (AFR 160-43)	Up After Normal IVP	Permanently Grounded
Coast Guard (CGR 3-J-C)	Ground 6 mo	Permanently Gounded

TABLE 2. Basic Stone Screening Evaluation for Aviators

Stone Analysis	Complete Blood Count (CBC)
Plain Nephrotomograms	Urine pH (Meter) Serum Electrolytes
IVP	Serum CA^{++} , $PO_4 =$ Uric Acid (x3)
Urinalysis	
Urine Culture	24-hr Urine for CA^{++} , $PO_4 =$ Uric Acid
Cystine Screen	
Additional Screening as Indicated	
Renal Scan	Parathormone Level
Renogram	Urinary Oxalate
CT Scan	NH_4Cl Loading

calcium nor 1,000 mg of uric acid. Additional evaluations—renal scan, renogram, parathormone levels, urinary oxalate levels—are performed when indicated. Those fliers at a high risk of rapid stone recurrence should be identified with this approach.

Those aviators who have passed a documented calcium oxalate stone in whom this screening battery is normal should be further evaluated with a program designed to detect the more subtle defects of calcium hyperabsorption, "renal-leak" hypercalciuria, hyperuricosuria, and hypomagnesiumuria. The outpatient urolithiasis evaluation proposed by Drach and associates provides a concise, simple, accurate, and relatively inexpensive means for doing this.⁽⁴⁾ Aviators with true idiopathic calculus disease as well as those likely to benefit from medication can usually be identified using this regimen.

Designated aviators having retained calculi in the urinary tract must, in almost all cases, be grounded until the stone is passed or surgically removed. Rarely, as with a stone documented to lie within the renal parenchyma or otherwise situated as to be unlikely ever to produce acute obstruction, a waiver may be considered. It may be feasible to waive an experienced pilot with a clinically quiet upper tract stone to restricted dual-place flight duty (Navy Service Group III). Additionally, exceptions may be warranted where the flier is a nonpilot crewmember not in direct control of the aircraft. These cases must be considered individually, and may require evaluation by a special board of flight surgeons. Patients with a retained calculus are managed by conventional

techniques of calculus manipulation and standard open operative procedures. The development by Ball and associates of techniques to manipulate small upper tract stones has been an important advance in the surgical treatment of calculi in flight personnel.⁽¹⁾

The flier who passes a calculus while deployed aboard ship or in isolated areas should undergo a minimum evaluation comprised of a complete blood count, KUB, and urinalysis. An IVP and urine culture can also be obtained even on smaller ships and in small field hospitals. If no evidence of calculus is seen, the aviator can be returned to flight status, but should undergo full evaluation once the facilities of a medical center are available.

Discussion

Stone-forming aviators found to have a metabolic disorder or an anatomic abnormality are at a significant risk of recurrent calculus. If the disorder is amenable to treatment or surgical correction which will assure that recurrence of stone is unlikely, return to flight status may be considered. Otherwise, permanent grounding is indicated. Medical treatment with thiazides and allopurinol may decrease recurrence in calcium oxalate stone disease and may be helpful in managing aviators with hypercalciuria or true idiopathic stone disease.^(3,11) Because compliance is poor in asymptomatic patients, such medical treatment is most applicable to those patients who pass a stone more often than once per year. Although side effects of allopurinol, phosphates, magnesium, and thiazides are usually minimal, a period of restricted flight status to assess possible adverse effects is strongly recommended. Additionally, a formal waiver to permit participation in flight operations will usually be required. Patient education concerning adequate hydration and diet is essential.

Flight personnel who pass calcium oxalate stones but whose metabolic workup is normal—those with idiopathic urolithiasis—will constitute the largest group of patients. It has been estimated that about 40 percent of males with idiopathic urolithiasis will have a recurrence, and it is known that peaks of recurrence occur at two and eight years from the initial episode.⁽⁶⁾ Put another way, the occasional stone-former is at a slightly increased risk of stone recurrence, but remains so for a very long time. Current Navy and Coast Guard regulations, which ground the aviator for 12 and 6 months respectively, ostensibly to monitor recurrence, are unrealistic in that they neither provide an adequate monitoring interval nor assure that calculus will not recur subsequent to return to flight status. Automatically grounding all aviators for the periods specified deprives the services of the talents of an aviator who may never have another stone. Interval monitoring with urinalysis plus plain tomograms or IVP, combined with a program of patient education, should

provide a reasonable margin for safety to allow these fliers to return to flight status.

Recommendations

Although it is recognized that each aviator with calculus disease must be evaluated individually, the following guidelines for managing aviator personnel with renal stone disease are proposed:

1. Designated aviators with a history of calculus, an initial episode of calculus, or an incidentally discovered calculus should undergo the standard stone evaluation outlined above, under the supervision of a urologist, with the addition of the Drach protocol where indicated. If these evaluations are normal, the aviator is returned to full flight status. He should have urinalysis plus plain nephrotomograms, or reasonable equivalent evaluation, at six-month intervals thereafter. Fliers with retained stones are grounded pending passage or treatment.

2. Designated aviators with successive episodes of calculus should be reevaluated with the screening battery to rule out intercurrent metabolic disease. Frequent recurrences may mandate permanent grounding.

3. Deployed aviators experiencing an episode of calculus should undergo immediate minimum evaluation with KUB, urinalysis and CBC, and with plain tomograms, intravenous pyelogram, and urine culture, if possible. With no evidence of retained stone, the aviator may be returned to full flight status, but must undergo full evaluation after deployment.

4. With a negative evaluation and no radiographic evidence of retained stone, aviators may be returned to full flight status:

- Two weeks following spontaneous passage of a stone
- Four weeks after stone manipulation
- Twelve weeks after open surgery

5. Aviators requiring medication for stone disease should be placed in restricted flight status (Navy Service Group III, or equivalent) for three months, to evaluate adverse effects of medication before resuming full flight status. A waiver to fly while taking such medication will have to be granted by the appropriate service Surgeon General when dictated by regulation.

6. Applicants for flight training having a history of calculus should be evaluated with plain nephrotomograms and IVP, followed by the stone-screening battery and the Drach protocol, if indicated. Retained calculi or metabolic abnormality are causes for rejection.

These guidelines should provide a uniform and aggressive approach to satisfactory evaluation and management of the military aviator with stone disease. This liberalized approach will permit more effective use of aviation personnel resources without compromising the high standards of military aviation safety.

References

1. Ball TP, Bobroff LM: Selective calculi catheterization for stone manipulation. *J Urol* 114:172-174, 1975.
2. Buley LE: Incidence, causes, and results of airline pilot incapacitation while on duty. *Aerosp Med* 40:64-70, 1969.
3. Coe FL: Treated and untreated recurrent calcium urolithiasis in patients with idiopathic hypercalciuria, hyperuricosuria, or no metabolic disorder. *Ann Intern Med* 87:404-410, 1977.
4. Drach GW, Perin R, Jacobs S: Outpatient evaluation of patients with calcium urolithiasis. *J Urol* 121:564-567, 1979.
5. Finlayson B: Renal lithiasis in review. *Urol Clin North Am* 1:181-212, 1974.
6. Marshall V, White RH, Chaput de Saintonge M, Tresidder GC, Blandy JP: The natural history of renal and ureteric calculi. *Br J Urol* 47:117-124, 1975.
7. United States Air Force Regulations, AFR 160-43.
8. United States Army Regulations, AR 40-501.
9. United States Coast Guard Regulations, CGR 3-J-C.
10. United States Navy OPNAV Instruction 3710.7J, Ch 10.
11. Yendt ER, Cohan M: Prevention of calcium stones with thiazides. *Kidney Int* 13:397-409, 1978. □

Marine's Severed Finger Reattached

Chances are that CPL Terry Lee Kuusi, USMC, will always remember his 20th birthday. He might even have a small scar to show for it.

Around midnight of the night before 19 April 1981, he was making his rounds as a security policeman at Naval Weapons Center, Concord, CA. It was raining as he started back down a ladder after checking the security of one of the buildings, and his right foot slipped as he began his descent. When he made a grab for the ladder, a ring on his finger caught on a rung, and the weight of his falling body ripped off the imprisoned finger.

Now stunned and on the ground, the young Marine called for the corporal of the guard on his radio and after the two conducted a brief, unsuccessful search for the missing digit, the hunt was abandoned and the injured man taken to the NRMCC Branch Clinic on the Concord base.

As medics gave him first aid, Marine Corps patrol drivers and PFCs Paul McGuire and Calvin Cosen arrived on the scene with the missing finger. Clinic personnel rapidly packed the finger in ice, wrapped up the injured hand, and soon had the patient enroute to NRMCC's headquarters hospital in Oakland, via a Navy fire department ambulance from Concord.

Awaiting the patient's arrival was a team of Navy microsurgicians—CDR James R. Schneider and LTs George

B. Batten and David E. Brown. They would be assisted in the surgery by HM3 Randy F. Hanson, a certified operating room technician assigned to Orthopedic Service. Hanson is responsible for maintaining the microscopes and coordinating the technical aspects of reimplantation and transplantation surgical procedures.

After seven hours in the operating room, the specialty surgeons successfully reattached the Marine's torn finger to his hand. Because of the violent nature of the sudden rip, the amputation was ragged rather than

cleanly severed, and it was necessary to remove a portion of a vein from his left foot to splice together arteries from the stump and finger.

LCPL Kuusi reported that he had no pain in his right hand and that three or four days after the surgery he regained movement in the reimplanted third finger.

According to CAPT David M. Lichtman, Chairman of Orthopedic Service and head of the hospital's microsurgery team, the reattachment appears to be a complete success.

—Betty Beck, PAO, NRMCC Oakland, CA



LCPL Kuusi's reattached finger is examined by LT Batten, one of the microsurgicians who replaced the digit. Looking on is HM3 Hanson, who coordinates the technical aspects of microsurgery.

Inguinal Hernia Repair With Local Anesthesia: A Military Necessity

CAPT Robert L. Glass, MC, USNR

Inguinal hernias are surgically repaired unless major medical contraindications are present. In the active duty military age groups, the vast majority of these lesions are the indirect or congenital type. Hernioplasty in these patients is rarely followed by recurrence. (2)

In the United States, inguinal hernia repairs have most commonly been done with spinal or general anesthesia. A preoperative battery of "routine" laboratory, chest film, EKG, and sometimes proctoscopy and barium enema are often done, and a hospital stay of three to five days is common.

Inguinal hernia repair with local anesthesia has been thoroughly tested and evaluated. (1) This technique is associated with fewer complications, less postoperative pain, and a significant decrease in cost.

Patient #1. A 20-year-old active duty BM3 was diagnosed as having a left inguinal hernia on 21 July 1980; he departed USS *John F. Kennedy* on 4 Aug 1980 for transit to NRMPC Portsmouth, VA, where he was admitted on 10 Aug 1980. His preoperative workup included a SMA-12, CBC, UA, PT, PTT, and a chest x-ray. On 11 Aug 1980, under spinal anesthesia, the patient had a repair of a left inguinal hernia and postoperatively, had a benign course, followed by two weeks of light duty. Time lost from work: Four weeks.

Patient #2. This 21-year-old HM2 first noted a left inguinal hernia in November 1980. He worked a regular shift 27 Jan 1981 on board USS *John F. Kennedy*, had a hernia repair under local anesthesia on 28 Jan 1981, and returned to full duty on 30 Jan 1981. Had full duty required heavy lifting, he would have been given two weeks of no lifting. Neither x-ray studies nor laboratory work were required. For pain, several doses of aspirin gr.x were prescribed during the first 24 hours postoperatively. Total time lost from work: Two days.

Technique

1. The patient showers an hour or so before surgery, using an antiseptic soap, paying particular attention to the abdomen, genitalia, and upper thighs. The patient uses a clipper and removes hair from the appropriate area himself; following the clipping, he shaves himself with a safety razor. In the operating room, the surgical

field is sprayed with an organic iodine solution.

2. Fifty ml of 0.5 percent lidocaine with epinephrine mixed with 10 cc of 0.25 percent marcaine is the anesthetic solution. At point (A) two inches medially/superiorly to the anterior superior iliac spine, 5-10 cc of solution is injected within the abdominal muscles to block the ilioinguinal and iliohypogastric nerves. From point (A) to the linea alba 4 cm below the umbilicus, 10-15 cc are injected in the subcutaneous tissue. From point (A) to the pubic tubercle, 10-15 cc of the solution is likewise injected subcutaneously and 10-15 cc from point (A) to the femoral pulse, 4-5 cm below the inguinal ligament. Supplemental injections of 5 cc along the periosteum of the pubic tubercle and in the properitoneal space at the internal inguinal ring may be necessary during surgery. The total volume should not exceed 60 cc.

3. Diazepam IV is titrated at 2-3 mg per minute until slurred speech occurs; usually 10 mg is used, but not more than 20 mg.

4. In many young men with a solid inguinal floor and a narrow internal ring (less than 2 cm), high ligation of the sac and narrowing of the ring with 2-4 nonabsorbable sutures is sufficient. A Marcy repair, if indicated, a Bassini, McVay, or Shouldice repair can be done with this anesthetic.

5. Aspirin and/or phenacetin are usually sufficient for analgesia. Patients are allowed to return to a full day of work within 48 hours, but lifting more than 20 lbs is not permitted for two weeks following surgery.

Summary

Inguinal hernia repair using local anesthesia is associated with fewer complications, less postoperative pain, less loss of work, and much lower cost than performing the procedure with spinal or general anesthesia. It is particularly useful aboard ship and at remote stations because the expense and inconvenience of medevac are avoided.

References

1. Chang FC, Farha GJ: Inguinal hernia under local anesthesia. *Arch Surg* 112:1069-1071, 1977.
2. Griffith CA: Inguinal hernia: An anatomical surgical correlation. *Surg Clin North Am* 39:531, 1959.
3. Ponka JL: Seven steps to local anesthesia for inguinal femoral hernia repair. *Surg Gynecol Obstet* 117:115-120, 1963. □

Dr. Glass is Assistant Chairman of the Department of Surgery, NNMCM Bethesda, MD 20014.

Peer Group Counseling in the Treatment of Acute Situational Adjustment Reaction

LT A.C. Eddy, MC, USNR

A prevalent problem in the Navy is the adjustment of young men from a civilian lifestyle to life aboard ship. One group of men who have greater than average problems adjusting are young, inner-city blacks. These men enter the Navy from a relatively unstructured society and frequently rebel when faced with shipboard discipline. This problem was identified aboard *White Plains* in late August 1980, when two young recruits experienced situational adjustment reaction and, in spite of repeated counseling sessions by their division officer, medical officer, and chaplain, went to extreme lengths to gain discharge from the Navy.

Both men had suffered situational adjustment reaction caused by shipboard living conditions that produced a culture shock so frightening that they lost sight of the reasons they had enlisted. This culture shock made them lose sight of their dissatisfaction with urban living and chronic unemployment. All they wished to do was to return home to a familiar situation.

Secondly, as new recruits, they had no support structure aboard ship with which they could identify in order to reorient them to their goals. As young, black, enlisted males, they were unable to accept counseling from an older, caucasian division or medical officer. In the absence of a credible support system, they turned to each other, for support. This had the effect of magnifying and reinforcing their own dissatisfaction.

In order to prevent these problems from recurring, a support structure was needed with which young, black urban recruits could identify. One system that could provide the needed support as well as reinforce positive behavior traits was a counseling group that included peers. Accordingly, a counseling group was created consisting of the chaplain, medical officer, and two young inner-city blacks who had been successful in adapting to Navy life. One man, an E-3 who had entered the Navy as an E-1 on the deck force, had in the recent past been selected by the striker board for a rate. The second was a rated E-6 who had had a successful career with rapid advancement. Both were chosen for their positive attitudes toward the Navy as well as their personal successes.

This group acted in the following manner. Crewmen first were identified as having adjustment problems

either through initial medical officer interviews during check-in procedures, self, or division officer referrals to the doctor or chaplain, or by repeated infractions of rules. After identification, the medical officer carefully interviewed them to rule out serious mental disorders. If he determined that their difficulties stemmed from a situational adjustment reaction, he introduced the person to the young striker. This counselor functioned as a big brother and a role model who had been through many of the same problems and had adjusted. In difficult cases, the older E-6 would also befriend the recruit and serve as an example of someone who worked within the Navy system and made a successful career for himself. These counselors were introduced to the recruits in sick bay but carried on their counseling informally on their own time.

In the first seven months after implementation, eight crewmembers having acute situational adjustment reactions were referred to these two counselors. Three of the men had an indication of inadequate personalities on initial medical interview as well as adjustment reactions. Six of the eight required only one long talk with a counselor and occasional encouragement on a continuing basis. Both crewmembers, who required more than one counseling session, had an indication of inadequate personality on initial medical interview. Followup evaluations by the medical officer showed that all eight crewmembers, after counseling, had adjusted to Navy life, and according to their division officers, increased productivity and showed a decrease in frequency of minor rule infractions.

This method of providing support and counseling for young, inner-city blacks has been extremely successful aboard *White Plains* and can logically be extended to include many varied populations such as rural dwellers from the southern United States, Hispanic-Americans, and other minorities. Counseling for situational adjustment reaction seems to provide a strong support system for new recruits with which they can easily identify and appears to have had a greater impact on the young, black recruits than repeated counseling by the caucasian chaplain and medical officer without peer group support. On a larger scale, this program could have a very positive effect on first-term retention. It provides role models for new recruits and demonstrates to a new recruit in a very convincing way that he too can have a successful Navy career if he puts forth the effort. □

When this article was written, Dr. Eddy was Medical Officer of USS *White Plains*.



USS White Plains

Notes & Announcements

IN MEMORIAM

CAPT Donald W. Cowherd, MC, USN (Ret.), former Ob/Gyn specialist, died 6 June 1981 at St. Louis University Hospitals.

Born in Denver, CO, Dr. Cowherd enlisted in the Navy in 1951. After studying medicine under a naval training program, he became a physician in 1961. His duty assignments included naval hospitals in Hawaii; Taiwan; Camp Pendleton, CA; Bethesda, MD; Camp Lejeune, NC; Whidbey Island, WA; and NRMC Portsmouth, VA, where he was Chairman of the Obstetrics and Gynecology Department.

Dr. Cowherd retired from the Navy in 1979 and moved to St. Louis where he became a staff physician at St. Louis University Hospitals.

ROBERT B. BROWN SURGICAL SYMPOSIUM

The National Naval Medical Center, the Uniformed Services University of the Health Sciences, and the D.C. Chapter, American College of Surgeons will sponsor the Robert B. Brown Symposium entitled Controversies in Surgery. The symposium will be held 1-3 Oct 1981 at the National Naval Medical Center, Bethesda, MD.

For information, write to: Administrative Assistant, Department of Surgery C-61, National Naval Medical Center, Bethesda, MD 20014.

NAVY SURGEONS TO MEET

In conjunction with the Clinical Congress of the American College of Surgeons meeting, there will be a Navy reception held 14 Oct 1981 from 1830 to 2030 at the Marines' Memorial Club, 609 Sutter Street, San Francisco, CA.

For information contact: CAPT W.J. Storz, MC, USN, Chairman, Department of Surgery, Naval Regional Medical Center, Oakland, CA 94627.

OCCUPATIONAL HAZARDS IN HOSPITALS

The First International Congress for Safety, Health and Wellbeing at Hospitals will meet 19-21 Oct 1981 in The Hague, The Netherlands. There will be workshops and symposia.

During the congress, the World Health Organization (WHO), in cooperation with the IPH Foundation, will organize the WHO Working Group to obtain relevant and practical information from today's hospital employees. The unprecedented means of communication is a challenge, because it allows the hospital workers, for the first time, to have a direct input to the WHO advisers,

resulting in recommendations to the governments.

The aim of the WHO Working Group is to specify the occupational hazards of various categories of professional and other personnel employed in hospitals, and to consider measures to be undertaken to prevent adverse health effects from occupational hazards in hospitals.

SMOKING CONFERENCE AT SAN DIEGO

The Environmental Health Service at NRMC San Diego will sponsor a one-day conference on Smoking, Smoking-Related Diseases, and Stop Smoking Methods. The conference will be held 20 Oct 1981 from 0800 to 1545.

The conference will focus on the hazards of cigarette smoking to the pulmonary and cardiovascular systems and on those added risks of disease incurred by smokers in certain occupational settings. A review of the various smoking-cessation methods available will be discussed as well as a review of our cessation program at NRMC San Diego.

All physicians, nurses, and health care professionals with an interest in this topic are encouraged to attend. There will be no registration fee.

For additional information, contact: Mrs. Carolyn Cappello, Environmental Health Service, Code JL, Naval Regional Medical Center, San Diego, CA 92134. Telephone: Autovon 957-2444, Commercial (714) 233-2442.

DENTAL CORRESPONDENCE COURSE REVISED

Periodontics (NAVEDTRA 10758-B) is a newly revised correspondence course for dental officers prepared by the National Naval Dental Center, Bethesda, MD.

The course is based on the text *Periodontics in the Tradition of Orban and Gottlieb*, ed, 5, by D.A. Grant, I.B. Stern, and F.G. Everett, published by the C.V. Mosby Co., St. Louis, 1979. The course consists of 12 assignments and covers such subjects as the structure of the periodontium; the etiology, epidemiology, and pathogenetic mechanisms of periodontal diseases; the types of periodontal diseases; therapeutic judgment; periodontal therapy; and the treated case.

Naval Reserve credit is evaluated at 24 points: 12 points upon completion of assignments 1 through 6, and 12 points upon completion of assignments 7 through 12. Dental officers who have completed the earlier edition may enroll in the new course for additional credit.

Applications for enrollment should be submitted to: Commanding Officer (Code 412), National Naval Dental Center, Bethesda, MD 20014.

DIAGNOSTIC IMAGING IN MEDICINE

The NATO Advanced Study Institute and the George Washington Medical Center will sponsor a course entitled Diagnostic Imaging in Medicine, 11-23 Oct 1981, in Estoril, Portugal.

Abstract papers of 300 words on topics such as nuclear medicine, ultrasound, CT, NMR, and clinical and experimental x-ray imaging should be submitted to: Richard C. Reba, M.D., Division of Nuclear Medicine, George Washington University Hospital, 901 23rd St., N.W., Washington, DC 20037. Telephone: (202) 676-3458.

There will be a \$95 registration fee.

LEGION OF MERIT WINNER

CAPT J. Raymond Fletcher, MC, received the Legion of Merit on 11 June 1981 for exceptionally meritorious conduct in the performance of outstanding service as the principal investigator in a series of highly significant research efforts related to the treatment of septic shock while assigned to the Naval Medical Research Institute, Bethesda, MD, from October 1976 to August 1980.

Dr. Fletcher, a 1961 graduate of Southern Methodist University and a 1965 graduate of the Washington University of Medicine, St. Louis, MO, was also recently elected into membership to the Society of University Surgeons. CAPT Fletcher is the only naval officer

holding membership in this society and is the second naval officer to receive such recognition.

In addition to his surgical responsibilities at the National Naval Medical Center, he serves as a Professor of Surgery at the Uniformed Services University of the Health Sciences and in the Surgical Research Division of the Naval Medical Research Institute.

CHAMPUS TO CONDUCT HMO TEST

Dr. John H. Moxley III, Assistant Secretary of Defense (Health Affairs) announced that Portland, OR has been selected as the first test site of the Health Maintenance Organization (HMO) demonstration to be conducted by CHAMPUS. The demonstration, authorized by the 1981 Defense Appropriation Act, is designed to examine the potential role of HMOs in the military health benefits program.

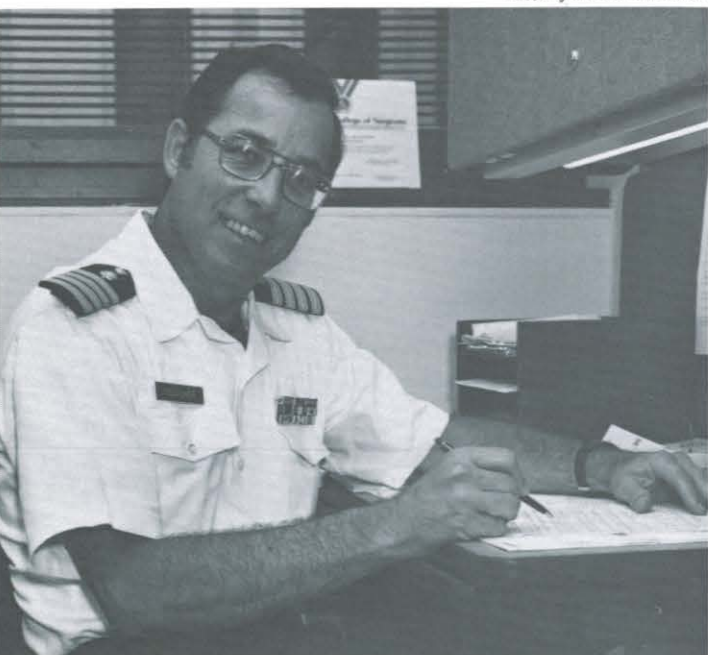
Beneficiaries residing in the greater Portland area will be offered a choice of using CHAMPUS or choosing one or more prepaid health benefits plans.

Under the prepaid plans, the Government pays a good part of the cost of the plan and the beneficiary pays a set premium (monthly or biweekly). The premium plus a possible nominal charge per visit will be the only health care costs incurred by those participating in the HMO type of prepaid plans.

It is anticipated that about 2,000 families will be permitted to enroll in the Portland program. Should the number of families wishing to enroll exceed the 2,000 limit, a lottery system would most likely be used to determine who would be selected to participate.

The current schedule calls for a summer enrollment with benefits becoming available in September or October of this year. Plans call for a one-year phase-in period, followed by three full years of benefits offered at each test site, and a final year for the completion of data collection and analysis.

Photo by HM2 J. Parmenter



Dr. Fletcher

WANTED—ARTICLES FOR CLINICAL NOTES

We are accepting manuscripts for the Clinical Notes series. Submissions should be no longer than 1,500 words, double-spaced, and if possible, contain references and black-and-white photos. Physicians, dentists, nurses, and other practitioners should have manuscripts cleared for professional accuracy prior to submission.

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